A DISSERTATION ON

A COMPARITIVE STUDY OF EPISIOTOMY SUTURING-CHROMIC CATGUT VS VICRYL RAPIDE AND CONTINUOUS VS INTERMITTENT SUTURING-A RANDOMISED CONTROLLED STUDY

Submitted to

THE TAMIL NADU DR. MGR. MEDICAL UNIVERSITY,

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In partial fulfillment of the regulations

For the award of the degree of

M.D. DEGREE OBSTETRICS AND GYNECOLOGY

May 2018

GOVERNMENT MOHAN KUMARAMANGALAM MEDICAL COLLEGE, SALEM, TAMILNADU.

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*I hereby declare that this dissertation titled "**a comparitive study of episiotomy suturing-chromic catgut vs vicryl rapide and continuous vs intermittent suturing-a randomised controlled study"***

*is a bonafide and genuine research work carried out by me under the guidance of **Prof Dr.B.JEYAMANI, M.D, D.G.O., Professor and Head of Departement,** Department of obstetrics and gynecology, Government Mohan Kumaramangalam Medical College Hospital, Salem, Tamil Nadu, India.*

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*is a bonafide work done by **DR. R. AISWARYA** in partial fulfillment of the requirement for the degree of M. D. in Obstetrics and Gynecology, examination to be held in 2018.*

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Gratitude can transform common days into thanksgivings,turn routine jobs into joys, and change ordinary opportunities into blessings. And here I would like to thank all those who have helped me through my post graduation to complete my thesis.

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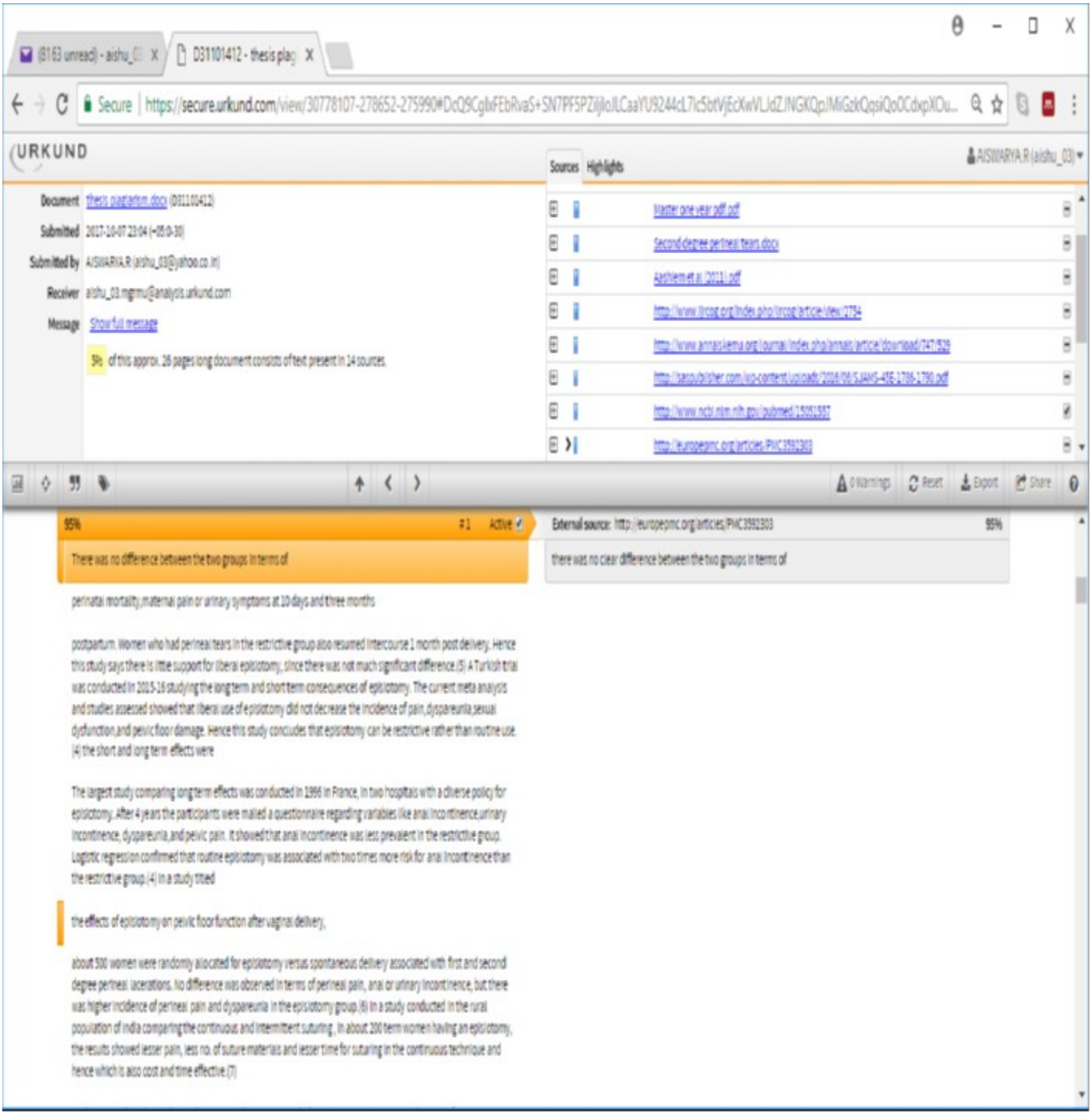
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There was no difference between the two groups in terms of
perinatal mortality,maternal pain or urinary symptoms at 10 days and three months
postpartum. Women who had perineal tears in the restrictive group also resumed intercourse 1 month post delivery. Hence this study says there is little support for liberal episiotomy, since there was not much significant difference.(5) A Turkish trial was conducted in 2015-16 studying the long term and short term consequences of episiotomy. The current meta analysis and studies assessed showed that liberal use of episiotomy did not decrease the incidence of pain,dyspareunia,sexual dysfunction,and pelvic floor damage. Hence this study concludes that episiotomy can be restrictive rather than routine use.(4) the short and long term effects were
The largest study comparing long term effects was conducted in 1996 in France, in two hospitals with a diverse policy for episiotomy. After 4 years the participants were mailed a questionnaire regarding variables like anal incontinence,urinary incontinence, dyspareunia,and pelvic pain. It showed that anal incontinence was less prevalent in the restrictive group. Logistic regression confirmed that routine episiotomy was associated with two times more risk for anal incontinence than the restrictive group.(4) In a study titled
the effects of episiotomy on pelvic floor function after vaginal delivery,
about 500 women were randomly allocated for episiotomy versus spontaneous delivery associated with first and second degree perineal lacerations. No difference was observed in terms of perineal pain, anal or urinary incontinence, but there was higher incidence of perineal pain and dyspareunia in the episiotomy group.(6) In a study conducted in the rural population of India comparing the continuous and intermittent suturing , in about 200 term women having an episiotomy, the results showed lesser pain, less no. of suture materials and lesser time for suturing in the continuous technique and hence which is also cost and time effective.(7)
External source: http://europepmc.org/articles/PMC3592303
95%
there was no clear difference between the two groups in terms of

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LIST OF ABBREVATIONS

PND- postnatal day

CC-chromic catgut

VR-vicryl rapide

PG-polyglactin

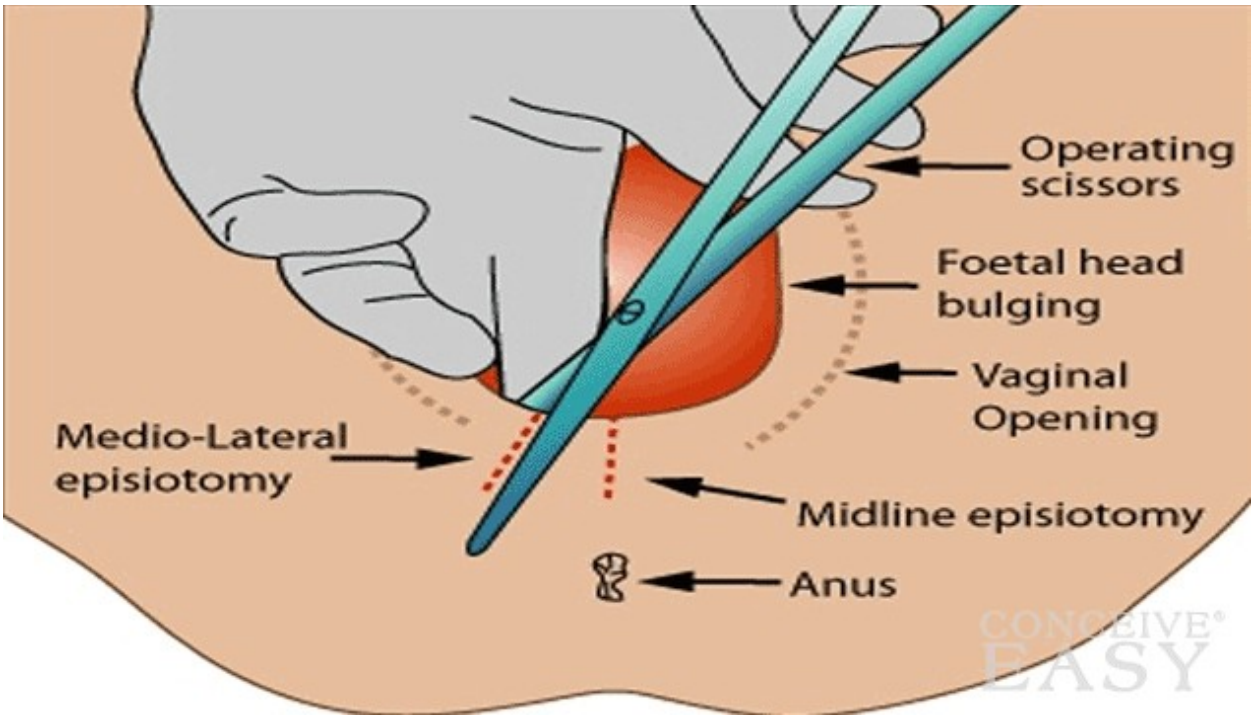
CPT-complete perineal tear

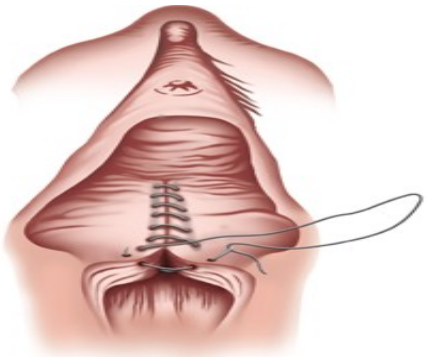
INTRODUCTION

Episiotomy , also known as 'perineotomy', is an incision made over the post vaginal wall/perineum during the second stage of labour for the baby to easily pass through without much morbidity to the mother and the fetus. It was introduced about 200 years earlier, but became accepted by most obstetricians only after Pomeroy's study in 1918.(1) In 1920, Delee suggested that routine episiotomy must be performed to shorten 2nd stage labour, to prevent fetal head injury, to prevent perineal injuries and injuries to vesico-vaginal septum. There has been much debate over the use of episiotomy over the past decades,but it still remains to be one of the most commonly done minor procedures in most hospitals. In our institution, we encourage the use of episiotomy at appropriate situations to

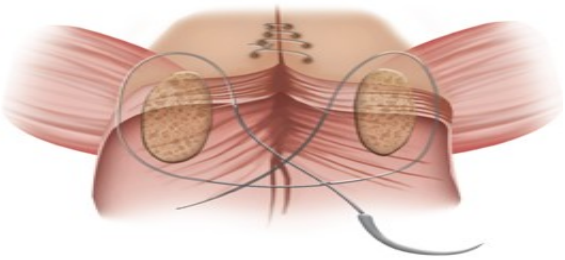
decrease the incidence of perineal tears and further traumatic PPH due to vaginal or cervical lacerations, during prolonged straining. With the use of routine episiotomy, the incidences of complete perineal tear with inadvertent delivery and the consequences of fecal incontinence etc have come down.(2)

There are 4 types of episiotomy-mediolateral,lateral,median and J-shaped. The median , previously used is avoided nowadays due to increased chances of extension to the anal sphincters and CPT. The incidence of anal sphincter injury is approximately 1% without an episiotomy, 9% with a mediolateral episiotomy and about 20% with a median one. The lateral incision is one which begins from the fourchette and extends laterally,not used widely due to its chances of causing injury to the Bartholin'sduct. The mediolateral is the most commonly used one these days and its is directed at an angle of about 30-45 degree from midline,almost midway between the ischial tuberosity and the anus. The muscles cut during episiotomy are the bulbospongiosus,superficial and deep transverse perineii. This lateral incision avoiding the perineal body is the one used commonly.

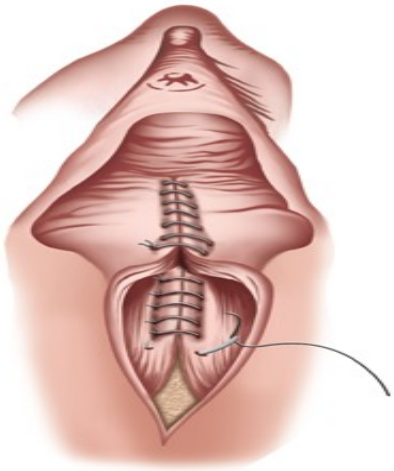

Operating scissors
Foetal head bulging
Vaginal Opening
Medio-Lateral episiotomy
Midline episiotomy
Anus
CONCEIVE EASY



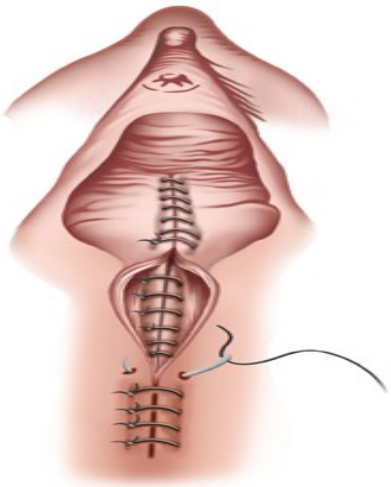
A. Closure of the vaginal mucosa by a continuous suture.



B. The crown suture, reuniting the divided bulbocavernous muscle.



C. Drawing together the perineal muscles and fascia with interrupted sutures.



D. Approximation of the skin edges with interrupted sutures.

Source: G. D. Posner, Jessica DY, A. Black, G. D. Jones: Human Labor & Birth, 6th Edition
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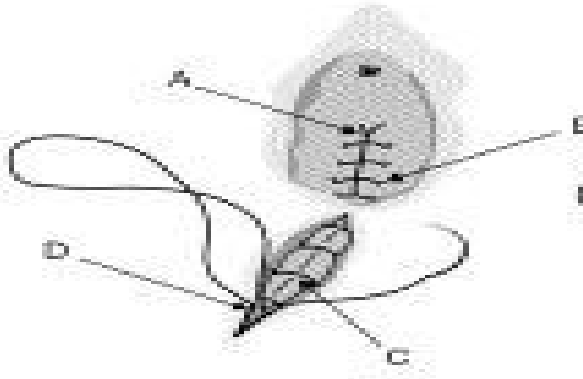
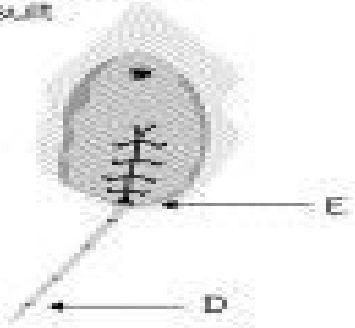
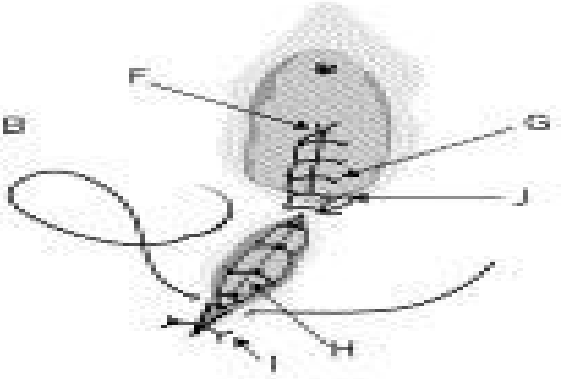
Continuous suturing technique



The finished result



Interrupted suturing method



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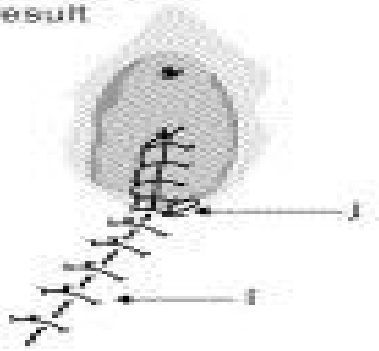

There has been wide debate for many years regarding the routine use of an episiotomy. Whilst few studies show that episiotomy during labour decreases the chances of complete perineal tear occurring in labour natural without an episiotomy,especially more in primigravidas, few other studies have concluded that there are chances of episiotomy extensions causing CPT and that perineal tears in well controlled, well monitored deliveries cause lesser perineal trauma than a episiotomy cut. There are also complaints from patients that an episiotomy causes much more pain and dyspareunia and may complicate sexual intercourse. Episiotomy in cases of difficult labour,prolonged labour,instrumental deliveries definitely has a role in decreasing fetal morbidities and distress, by making more space for the fetus to pass through, allowing easy and quicker delivery of the baby , hence reducing distress.

Episiotomy pain can be reduced by performing the procedure after giving a local anesthetic injection at the site of incision. Frequent assessment of pain can be done and is usually treated with simple analgesic medications. Hence, the proper use of episiotomy whenever needed helps in easy and controlled delivery of the fetus, and helps reduce maternal and perinatal morbidities.

The material used for an episiotomy was initially chromic catgut widely, but now being replaced more and more by synthetic absorbable sutures due to their lesser chance of reactions than catgut. Materials like Vicryl and polyglactin have gained popularity. And also,monofilament thinner materials of size like 2-0 and 3-0 are being used, so that the knots are tight and they heal more rapidly.

Suture materials used are absorbable and nonabsorbable. Initially nonabsorbable sutures like silk and nylon were used, which needed removal after 1 week of procedure. Of absorbable suture materials, only polyglycolic and polyglactin cause minimal tissue reaction and inflammation as per the current literature. A relatively new material polyglactin 910 rapide (PR consists of smaller molecules of the same components as coated polyglactin 910 (PG) and is absorbed more quickly than other absorbable materials. Chromic catgut (CC) is a natural absorbable suture material treated with chromic acid salts which bind to antigen sites in the collagen degraded by lysozymes, the proteolytic enzymes released by inflammatory cells. It maintains 60% tensile strength for 7-10 days. Tensile strength is lost within 28 days, and suture material digested within 90 days. Polyglactin 910 (PG) is a synthetic absorbable suture material composed of a copolymer, 90% glycolide and 10% L-lactate, coated with polyglactin 370 and calcium stearate. Original tensile strength is lost between 4-5 weeks and absorption is completed between 56-70 days. Polyglactin 910 rapide (PR) has the same composition as polyglactin 910

(PG) but has rapid absorption achieved by exposure to gamma irradiation resulting in material with low molecular weight. The original tensile strength is lost by approximately 10-14 days and absorption is completed by 42 days.

Regarding the technique of suturing also,there are debates as to whether the intermittent or the continuous technique is better. The oldschool textbook method of intermittent technique of suturing which was widely used is now being replaced in most centres by the continuous suturing technique.

In the intermittent suturing,

1. first a bite of suture is taken over 1 cm above the apex of the episiotomy wound and a knot tied.

2.Then a continuous interlocking suture is done for the mucosa.

3.The bulbospongiosus muscle is then sutured separately in an intermittent simple sutures.

4.The skin is last sutured as mattress sutures.

The time taken was a bit more and more knots placed in this technique was found to hinder wound healing.

Hence the continuous suturing technique was tried, where,

1. the first knot about 1 cm above the apex of the episiotomy in the vaginal mucosa is the same, but ,

2.the rest suturing is in a continuos fashion either locking or unlocking,from the apex until the hymenal border of the mucosa

3. then continuing through the muscular layer and,

4. after that the skin in a subcuticular way.

This technique consumed lesser time for suturing and also the lesser number of knots allowed for better wound healing.

The complications occurring after episiotomy suturing are pain, infection of the wound, discharge, dehiscence. Pain persists for about 2 weeks postpartum and may

require analgesics in few cases. The pain may hinder the mother in her day to day activities, cause sexual dysfunction and also mental stress postpartum. It is usually relieved by simple analgesics. The wound infection occurs mainly,owing to the proximity of the episiotomy site to the anal region and more chances of fecal contamination. Routine use of antibiotics after an episiotomy is not recommended by the ACOG and the Cochrane trial.(3) The RCOG, however, recommends routine antibiotics after an episiotomy. It is safer to use antibiotics prophylactically to prevent serious complications like dehiscence. Wound dehiscence was preached to be repaired after 2-3 months previously, but now immediate resuturing is recommended and proved to have same wound healing properties.

BACKGROUND

Perineal trauma is experienced by millions around the world, and have a long term impact on the postpartum life in terms of pain, dyspareunia and the type of healing is affected by the type of repair, that being affected by the type of suturing, and the material used. The objective of this study is to assess the effects of catgut and vicryl rapide in wound healing postpartum and also comparing the two techniques continuous suturing versus intermittent.

IMPLICATIONS FOR RESEARCH

Research into the repair of perineal trauma remains surprisingly neglected and such work should be paramount if the extent of morbidity, both short and long term, is to be reduced for women throughout the world. Given the large numbers of women who require perineal repair and the amount of women who suffer morbidity, further research should be en couraged to minimise these problems. Concern still lies with the need to remove absorbable synthetic materials such as Dexon and Vicryl. Further research into alternative suture materials is urgently needed and this must include long term follow-up. It is vital that any new suture material should be evaluated in a randomised controlled trial before it is widely adopted. Hence the research using the newer vicryl rapide will be useful in bringing about a change.

REVIEW OF LITERATURE

After being described by Ould in as early as 1741, episiotomy was routinely given in a mediolateral fashion in all nulliparous births in order to protect the fetal head from trauma and also the pelvic floor from extreme lacerations.(4)

In the Wear Berkshire perineal management trial, one thousand women were allocated to one of the two groups-one with restrictive episiotomy and another with liberal episiotomy.

The restrictive group experienced more perineal tears and labial tears. There was no difference between the two groups in terms of perinatal mortality,maternal pain or urinary symptoms at 10 days and three months postpartum. Women who had perineal tears in the restrictive group also resumed intercourse 1 month post

delivery. Hence this study says there is little support for liberal episiotomy, since there was not much significant difference.(5)

A Turkish trial was conducted in 2015-16 studying the long term and short term consequences of episiotomy. The current meta analysis and studies assessed showed that liberal use of episiotomy did not decrease the incidence of pain,dyspareunia,sexual dysfunction,and pelvic floor damage. Hence this study concludes that episiotomy can be restrictive rather than routine use.(4) the short and long term effects were

Short and long-term consequences of performing an episiotomy

Short term effects

- Perineal lacerations
- Hemorrhage and increased blood loss
- Wound site edema
- Wound site infection
- Anal sphincter and rectal mucosal damage
- Urethral injury
- Bladder injury
- Hematoma formation
- Pain
- Episiotomy dehissence

Long-term effects

- Chronic infections
- Anorectal dysfunction
- Urinary incontinence
- Pelvic organ prolapse
- Sexual dysfunction
- Pain

The largest study comparing long term effects was conducted in 1996 in France, in two hospitals with a diverse policy for episiotomy. After 4 years the participants were mailed a questionnaire regarding variables like anal incontinence,urinary incontinence, dyspareunia,and pelvic pain. It showed that anal incontinence was less prevalent in the restrictive group. Logistic regression confirmed that routine episiotomy was associated with two times more risk for anal incontinence than the restrictive group.(4)

In a study titled the effects of episiotomy on pelvic floor function after vaginal delivery, about 500 women were randomly allocated for episiotomy versus spontaneous delivery associated with first and second degree perineal lacerations. No difference was observed in terms of perineal pain, anal or urinary incontinence, but there was higher incidence of perineal pain and dyspareunia in the episiotomy group.(6)

In a study conducted in the rural population of India comparing the continuous and intermittent suturing , in about 200 term women having an episiotomy, the results showed lesser pain, less no. of suture materials and lesser time for suturing in the continuous technique and hence which is also cost and time effective.(7)

Dash et al conducted a study in Behrampur medical college , Odisha in 2013, comparing two techniques of suturing- continuous and intermittent and according to their study, the continuous suturing technique was better with lesser time required,lesser suture material required, and also lesser pain. (8)

Kettle et al also conducted a similar study and found out lesser pain in the continuous suturing group. Almeida and Reico also compared the two techniques and found lesser pain in the continuous group.(9)

They did a meta analysis of about 16 trials done in this aspect and found out that the continuous subcuticular suturing technique was associated with lesser pain on 10^{th} postnatal day, lesser need for suture removal compared to the intermittent suturing, but no difference was observed in terms of dyspareunia and resuturing of the wound.

Mota R and Costa F differed in that they compared subcuticular suturing with adhesive glue for skin sutures and found lesser pain when glue was used instead of sutures.(10)

This study was done over a 100 women to compare mainly pain long term in the two groups. Other variables measured were secondary outcomes like duration of repair, technical difficulties during repair, wound complications observed postpartum, and regaining of sexual function in 30 days postpartum. There was no

difference in the two groups in terms of pain during the procedure, technical difficulties, wound outcome. The glue repair took lesser time about four minutes lesser and had lesser pain postpartum.

The Cochrane meta analysis rewiew also says that there is less pain and lessertime taken in the continuous technique. (11)

In a study comparing overlap repair vs end to end repair, the overlap repair was better in that there was lesser fecal incontinence and dyspareunia , after 1 year follow up.(12)

In another study conducted in 2014 in Cuttock,Odisha- the continuous method is better in terms of dyspareunia,lesser time taken for suturing, and he added a point that for a new trainee to suture the episiotomy wound, the continuous method was easier and required a shorter learning curve.(13)

In KIMS, Karad, a study was done among 100 women divided into two groups for the two techniques of suturing. Episiotomy was given in view of shortening duration of 2nd stage of labour, preventing fetal head injuries, preventing perineal tears and hence incontinence. The study reported lesser incidence of pain in the continuous suturing than the intermittent technique.(14)

Moving on to studies comparing suture materials,newer monofilament synthetic suture materials have replaced the traditionally used catgut for episiotomy suturing.

In a study conducted in Dhavangare, use of vicryl resulted in lesser pain and better wound healing than catgut.(15)

The Cochrane database comparing various trials comparing catgut and other synthetic suture materials , like standard synthetic,rapidly absorbing synthetic sutures and glycerol impregnated sutures, concluded that catgut causes more short term perineal pain than synthetic suture materials.(16)

The Ipswich Childbirth study, which was a randomized comparison between Polyglactin and catgut, conducted in 1992-1994, concluded that the polyglactin group required lesser analgesics and there was less pain at 10 days postpartum, compared to the catgut group. The only disadvantage was that out of 200 people sutured using polyglactin,one needed resuturing.(16)

In a study conducted in the institute of social obstetrics and government Kasturba Gandhi hospital in Chennai in 2012, they concluded that there was lesser pain postpartum and lesser wound dehiscence in the polyglactin group compared to the catgut group,but there was no significant difference in dyspareunia between both. (17)

In 2015, Abdullah, Iqbal , Sohail conducted a study at the Services Hospital Lahore,comparing the incidence of pain after episiotomy in Primigravidas. They conducted this study on 100 women. The basis of their study was that vicryl rapide

or polyglactin had lesser tissue reaction was absorbed by hydrolysis,in comparison to catgut which was manufactured using collagen, causes tissue reaction and is degraded by proteolytic reaction and phagocytosis.(4) the results of their study was that use of vicryl rapide was better for episiotomy.

Al Khafaji compared two different methods of episiotomy and published a study in 2005-06. It was conducted on300 women where, 100 women were sutured using vicryl and 200 with chromic catgut and examined at 5 and 10 days postpartum for pain and wound healing. In majority of women the indication for episiotomy was nulliparity with a tight perineum . pain on the 5^{th} day was lesser in the vicryl group. This group had a different result in that wound infection was lesser with vicryl but with mattress technique suturing.(4)

An article in the British Journal of midwifery explains about the material I have used in my study-the vicryl rapide. Materials such as Dexon and Vicryl cause minimal tissue reaction, but takes about 2-3 months to degrade. But the newer Vicryl Rapide or Polyglactin has smaller components of vicryl and degrades more quickly- after 5 days the tensile strength is reduced by 50 % and after 14 days all tensile strength and tension is lost.(18)

In a study conducted in MVJ medical college Bangalore,comparison between continuous and intermittent suturing showed that the continuous technique was

associated with lesser time taken,lesser material used,lesser pain postpartum, and lesser need for analgesics.(19)

In a randomized controlled trial conducted by Kettle , Hill, Jones, Reynolds- comparing the two techniques of suturing and also the two materials used, they stated that the continuous technique of suturing causes lesser pain on the 10th postpartum day compared to intermittent technique and the polyglactin material obviates the need for suture removal 3 months postpartum than the catgut material.

Kurien Joseph et al conducted a study in 2008, at the railway hospital among 150 patients comparing the three suture materials- chromic catgut, polyglactin standard and polyglactin rapide. The patients were divided in three groups a prospective randomized trial done. The study showed distinctive advantage of polyglactin or vicryl rapide over the standard vicryl and catgut materials in terms of postpartum pain, need for analgesics, wound healing, need for resuturing.

McRodt et al studied comparison between polyglactin and chromic catgut , and found significant difference in short term pain between the two, but no difference in long term pain. They also mentioned the need for suture removal in the vicryl rapide group in about 12% women due to delayed absorption and tight sutures.

AIMS AND OBJECTIVES

The aim of the study was to compare the efficacy between two suture materials- chromic catgut and vicryl rapide, and also between two techniques of episiotomy suturing- continuous vs intermittent.

The parameters that were assessed are-

1. Time taken for suturing

2. Cut through while suturing

3. Fever

4. Pain over the episiotomy site

5. Wound healing in terms of edema discharge and dehiscence

All these parameters were assessed at day 2 and day 7.

MATERIALS AND METHODS

This study was conducted in women admitted in our labour ward in government Mohan Kumaramangalam medical college hospital,Salem , in those who underwent labour natural with an episiotomy. Written consent was obtained before the procedure and parameters monitored as in the proforma.

It is a prospective randomized control study , conducted in 200 patients divided into four groups of 50 each, conducted during the period of January 2016 to June 2017. The four groups in which patients were assigned are, episiotomy suturing as

1. Continuous technique using chromic catgut
2. Continuous technique using vicryl rapide
3. Intermittent technique using chromic catgut
4. Intermittent technique using vicryl rapide

METHODS

All women admitted with labour pains and needed an episiotomy, in the age group of 18-30 years were included in the study.written consent was obtained.

EXCLUSION CRITERIA: women with,

1.intrapartum fever

2.cervical tear

3.extension of episiotomy

4.anemia

5.gestational diabetes mellitus

6.severe pre-eclampsia

7.HIV and Hep-B positive

8.IUD

9. cases handled outside

The women fulfilled the above criteria were assigned in one of the groups for episiotomy and sutured using either of the materials- vicryl rapide 2-0 36mm round bodied ½ circle or chromic catgut 1-0 30mm round bodied ½ circle. They

were sutured with either of the techniques- intermittent suturing in three layers mucosa , muscle and skin or all three layers in a continuous fashion.

All the episiotomy repairs were done after infiltration with a local anesthetic lignocaine hydrochloride 2%. General asepsis was maintained while performing the episiotomy using cleansing with betadine. Lignocaine test dose was first given to prevent any untoward events due to lignocaine toxicity.

Episiotomy was given when the baby's head was crowning and the perineum was well thinned out. Performing an episiotomy too early may cause excess bleeding and hence avoided.

Keep two fingers between the fetal head and the perineum and we cut about 4-5 cm in the mediolateral direction. The fetal head and mainly the shoulders should be delivered in a well controlled manner with good perineal support, so that extension of episiotomy is avoided.

After delivery of placenta the perineum is thoroughly examined for any lacerations,extension of the cut or excess bleeding elsewhere.

During suturing , the time taken from start of mucosal suturing to end upto the skin was noted and cut through while taking a bite with the suture material was noted.

The women were followed up in the postnatal ward on day 2 and day 7 and looked for temperature, pain and wound healing. The pain was measured using an oral analogue scale and also if there need for analgesics was noted. Wound healing was measured in terms of edema, redness ,discharge and dehiscence.

RESULTS

Statistical methods:

Time taken for suturing, cut through, pain at 2 days, need for analgesics at 2 days, edema, temperature, wound healing at 2 days and 7 days were considered as outcome variables. Chromic catgut intermittent and vicryl rapide intermittent were consider as primary explanatory variable. Demographic age, gravida, was consider as other explanatory variable.

Descriptive analysis: Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. Data was also represented using appropriate diagrams like bar diagram, pie diagram and box plots. Both the study groups (chromic catgut intermittent and vicryl rapide intermittent) were compared with respect to all the potential confounding baseline variables.

The association between categorical explanatory variables and quantitative outcome was assessed by comparing the mean values. The mean differences along with their 95% CI were presented. Independent sample t-test. Association between quantitative explanatory and outcome variables was assessed by calculating person correlation coefficient and the data was represented in a scatter diagram.

Categorical outcome:

The association between explanatory variables and categorical outcomes was assessed by cross tabulation and comparison of percentages. Chi square test was used to test statistical significance.

P value < 0.05 was considered statistically significant. IBM SPSS version 22 was used for statistical analysis.(20)

RESULTS:

Table 1: Descriptive analysis of study group in study population (N=100)

study group	Frequency	Percentage
Chromic catgut	50	50.00%
Vicryl rapide	50	50.00%

Among the study population, 50(50%) people were in chromic catgut group and 50(50%) people were in vicryl rapide. (table 1& Figure 1)

Figure 1: Bar chart of study group distribution in study population (N=100)

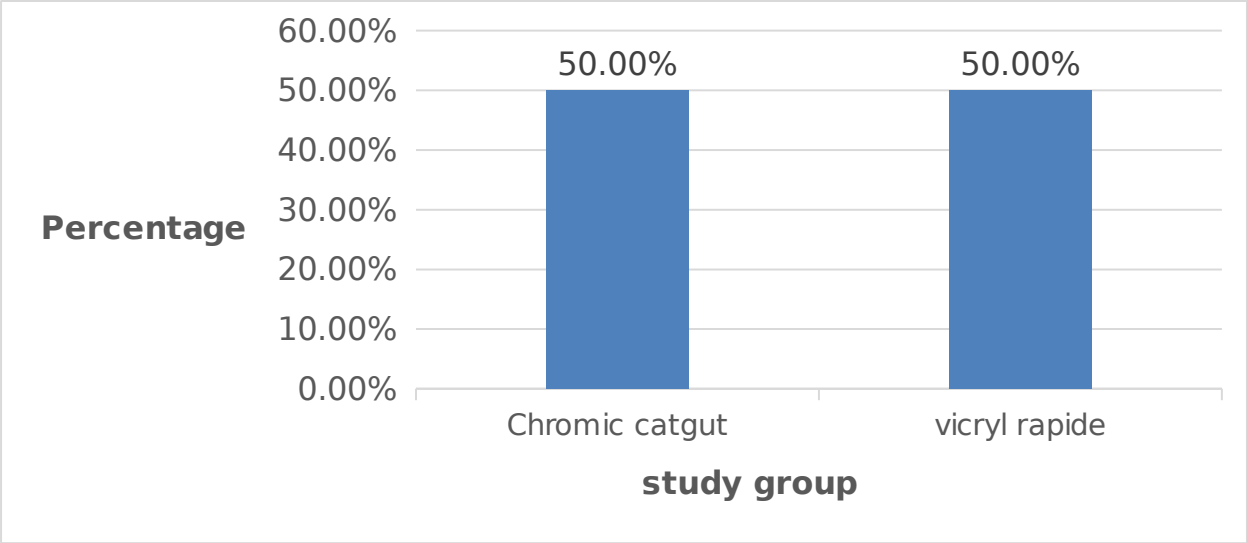

Table 2: Association of study group with Gravida of study population (N=100)

Gravida	study group		Chi square	P-value
	Chromic catgut	vicryl rapide		
Primi	23 (46%)	16 (32%)	2.060a	0.151
Multi	27 (54%)	34 (68%)		

Among the Chromic catgut 23 (46%) were in Primi and 27 (54%) were Multi respectively. The number of Primi and Multi was 16 (32%) and 34 (68%) in vicryl rapide group. The differences gravida proportion between the two groups was statistically not significant (P value 0.151). (table 2 & figure 2) meaning the two groups were comparable in terms of gravida.

Figure 2: Bar chart of comparing Gravida of the two study groups (N=100)

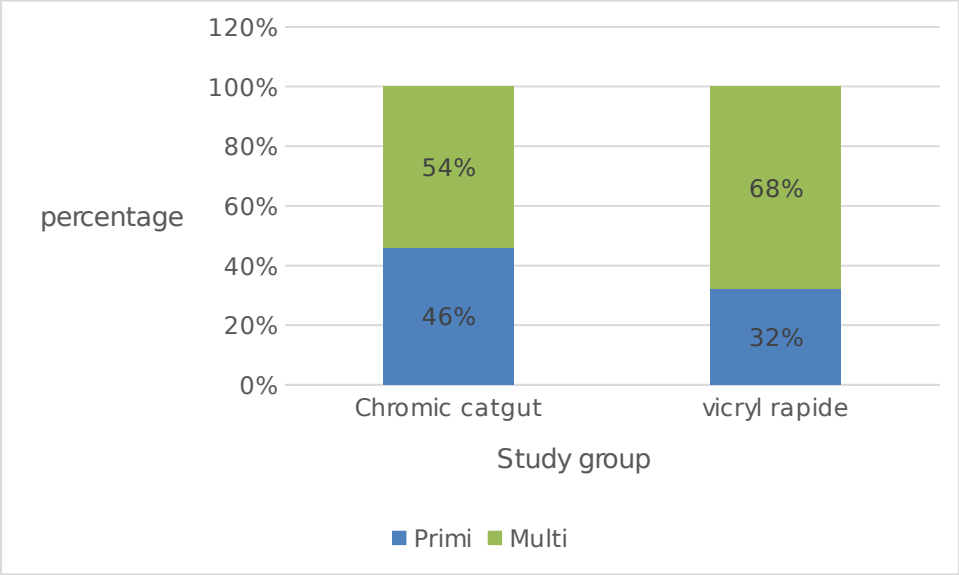

Table 3: Comparison of mean Age between study groups (N=100)

study group	Age Mean± STD	Mean difference	95% CI		P value
			Lower	Upper	
Chromic catgut	23.98 ± 3.47	-0.90	-2.22	0.42	0.180
vicryl rapide	24.88 ± 3.2				

The mean age of chromic catgut group was 23.98 ± 3.47 and the vicryl rapide group was 24.88 ± 3.2. The difference between two groups was statistically not significant (p value 0.180). (Table 3). The two groups were comparable in terms of age .

Table 4: Association of study group with Cut through of study population (N=100)

Cut through	study group		Chi square	P-value
	Chromic catgut(N=50)	vicryl rapide(N=50)		
Present	1 (2%)	11 (22%)	9.470a	0.002
Absent	49 (98%)	39 (78%)		

Among the Chromic catgut 1 (2%) cut through was present and 49 (98%) Cut through was absent. The number of cut through present and absent was 11 (22%) and 39 (78%) in vicryl rapide group. The differences cut through proportion between the two groups was statistically significant (P value 0.002). (table 4)

Table 5: Association of study group with Pain at 2 days of study population (N=100)

Pain at 2 days	study group		Chi square	P-value
	Chromic catgut(N=50)	vicryl rapide(N=50)		
Yes	15 (30%)	1 (2%)	14.583a	<0.001
No	35 (70%)	49 (98%)		

In the Chromic catgut group 15 (30%) had pain at 2 days. In the vicryl rapide group, 1 (2%) had pain at 2 days. The differences pain at 2 days proportion between the two groups was statistically significant (P value <0.001). (table 5)

Table 6: Association of study group with Need for Analgesics at 2days of study population (N=100)

Need for Analgesics at 2days	study group	
	Chromic catgut(N=50)	**vicryl rapide(N=50)**
Yes	9 (18%)	0 (0%)
No	41 (82%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group 9 (18%) had need for Analgesics at 2 days. (table 6)

Figure 3: Bar chart of comparing Need for Analgesics at 2days of the two study groups (N=100)

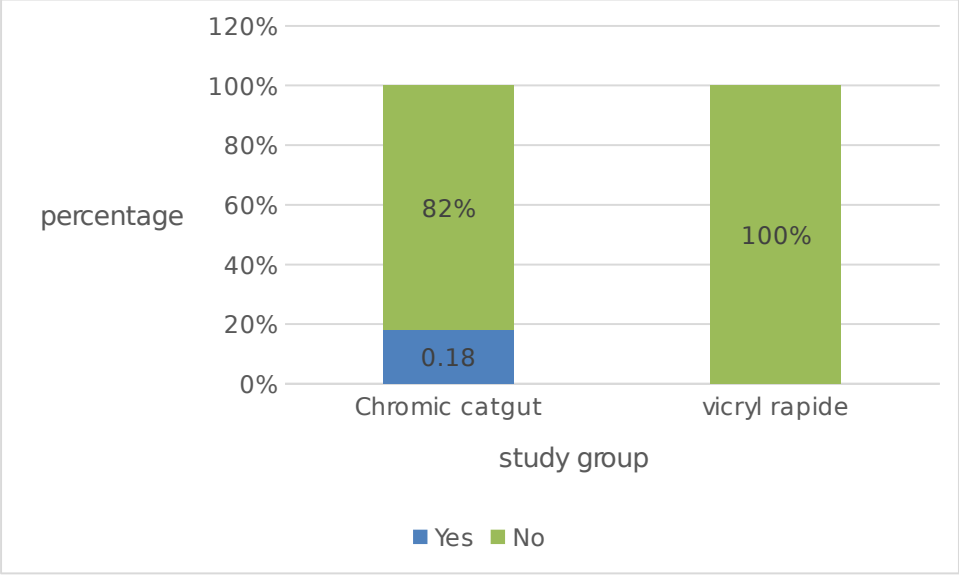

Table 7: Association of study group with Edema at 2 days of study population (N=100)

Edema at 2 days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	3 (6%)	0 (0%)
No	47 (94%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group 3 (6%) had Edema at 2 days. (table 7)

Table 8: Association of study group with Temperature at 2 days of study population (N=100)

Temperature at 2 days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	1 (2%)	0 (0%)
No	49 (98%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group 1(2%) had Temperature at 2 days. (table 8)

Table 9: Association of study group with Wound Healing at 2days of study population (N=100)

Wound Healing at 2days	study group	
	Chromic catgut(N=50)	**vicryl rapide(N=50)**
Normal	48 (96%)	50 (100%)
Abnormal	2 (4%)	0 (0%)

*No statistical test was applied considering "0" subjects in one of the cells

Among the Chromic catgut group 48 (96%) had normal wound healing at 2days of and 2 (4%) had abnormal wound healing at 2days postpartum. The number of normal wound healing at 2days of was 50 (100%) in vicryl rapide group. (table 9 & figure 4)

Figure 4: Bar chart of comparing wound healing at 2days of the two study groups (N=100)

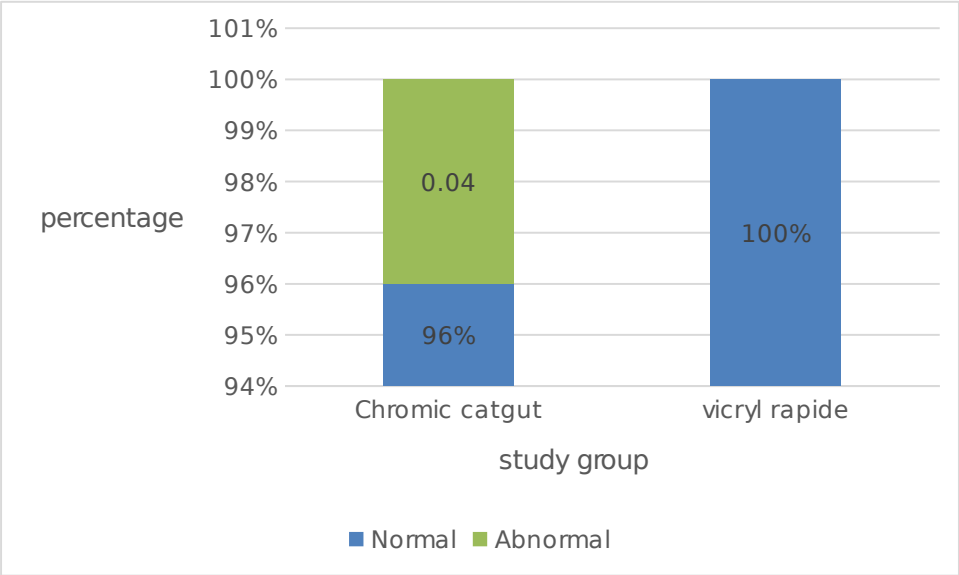

Table 10: Association of study group with Induration at 2days of study population (N=100)

Induration at 2days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	2 (4%)	0 (0%)
No	48 (96%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group 2(4%) people present Induration at 2 days. (table 10)

Table 11: Association of study group with Pain at 7days of study population (N=100)

Pain at 7days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	2 (4%)	0 (0%)
No	48 (96%)	50 (100%)

In the Chromic catgut group 2(4%) had pain at 7 days. (table 11 & figure 5)

Figure 5: Bar chart of comparing Pain at 7days of the two study groups (N=100)

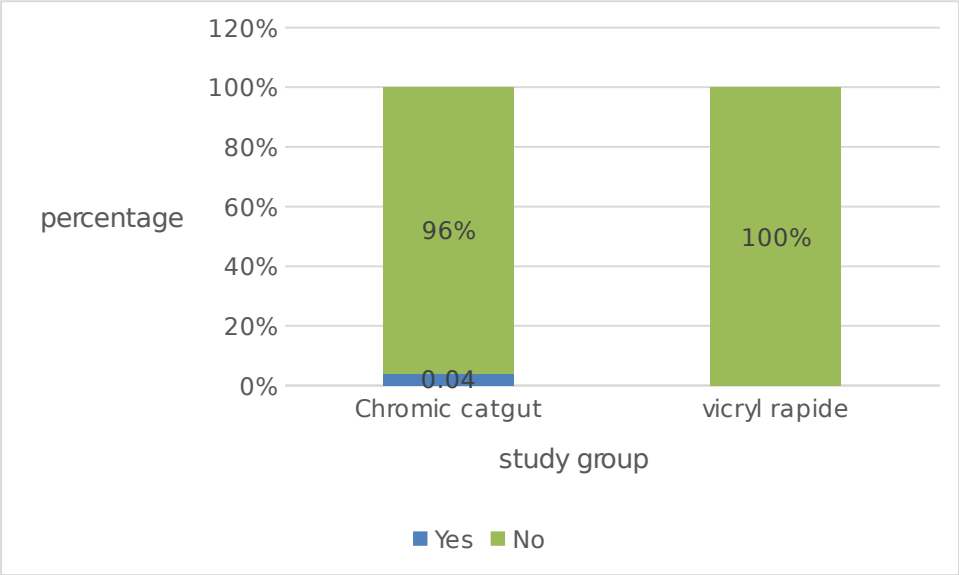

Table 12: Association of study group with Need for Analgesics at 7days of study population (N=100)

Need for Analgesics at 7days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	2 (4%)	0 (0%)
No	48 (96%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group 2(4%) had need for analgesics at 7 days. (table 12 & figure 6)

Figure 6: Bar chart of comparing need for Analgesics at 7days of the two study groups (N=100)

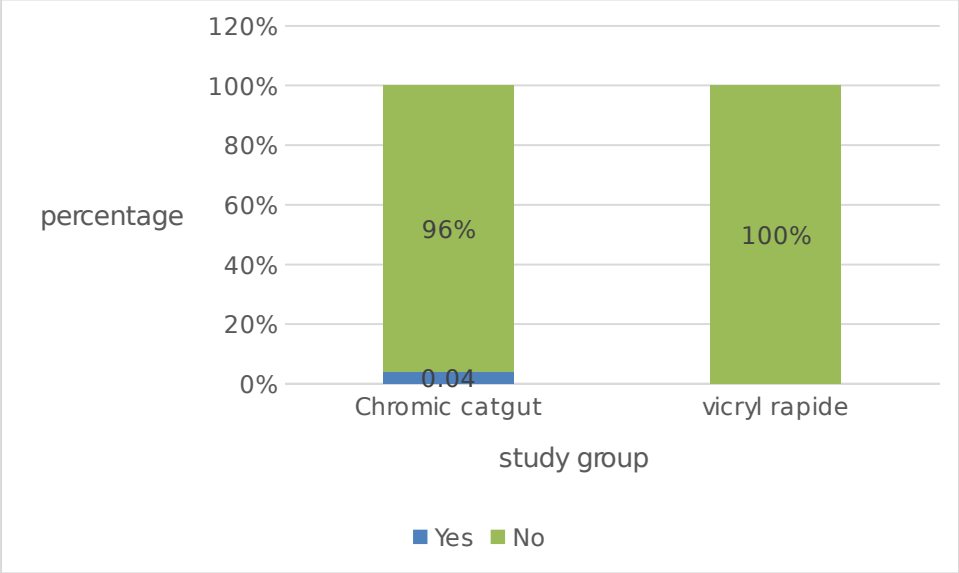

Table 13: Association of study group with Edema at 7days of study population (N=100)

Edema at 7days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	3 (6%)	0 (0%)
No	47 (94%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group 3(6%) had Edema at 7 days. (table 13)

Table 14: Association of study group with Temperature at 7days of study population (N=100)

Temperature at 7days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	2 (4%)	0 (0%)
No	48 (96%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group 2(4%) had Temperature at 7 days. (table 14)

Table 15: Association of study group with Wound Healing at 7days of study population (N=100)

Wound Healing at 7days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Normal	48 (96%)	50 (100%)
Abnormal	2 (4%)	0 (0%)

*No statistical test was applied considering "0" subjects in one of the cells

Among the Chromic catgut group 48 (96%) had normal wound healing at 7days of and 2 (4%) had abnormal wound healing at 7days of . The number of normal wound healing at 7 days was 50 (100%) in vicryl rapide group(table 15 & figure 4)

Figure 7: Bar chart of comparing wound healing at 7days for of the two study groups (N=100)

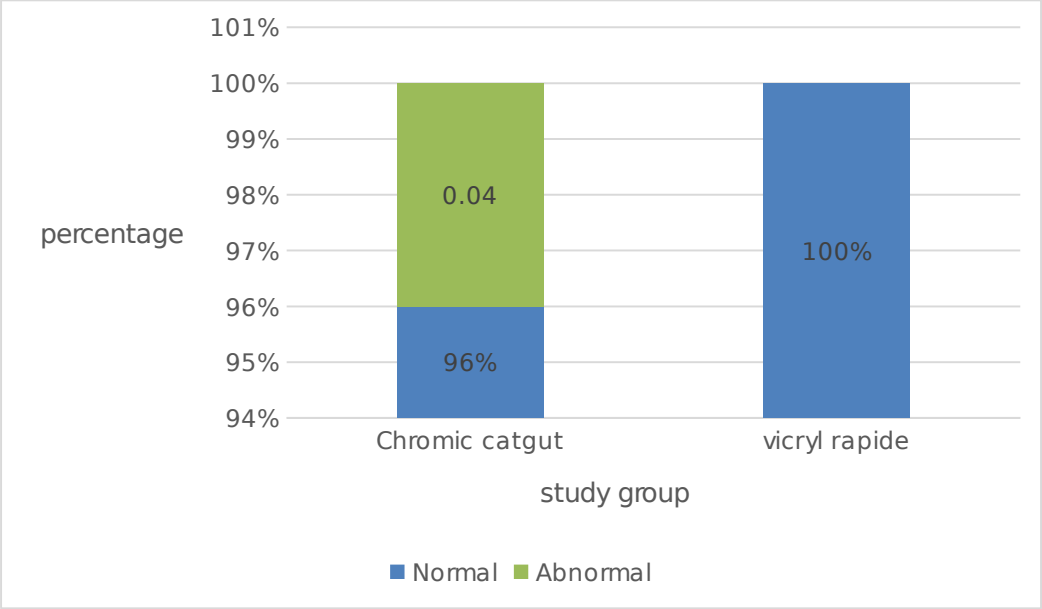

Table 16: Association of study group with Induration at 7days of study population (N=100)

Induration at 7days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	2 (4%)	0 (0%)
No	48 (96%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group in 2 women(4%) Induration was present at 7 days. (table 16)

Table 17: Association of study group with Discharge at 7days of study population (N=100)

Discharge at 7days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	2 (4%)	0 (0%)
No	48 (96%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group 2(4%) patient Discharge at 7 days. (table 17)

Table 18: Association of study group with Dehiscence at 7days of study population (N=100)

Dehiscence at 7days	study group	
	Chromic catgut(N=50)	vicryl rapide(N=50)
Yes	2 (4%)	0 (0%)
No	48 (96%)	50 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut group 2(4%) patient Dehiscence at 7 days. (table 18 & figure 8)

Figure 8: Bar chart of comparing Dehiscence at 7days for of the two study groups (N=100)

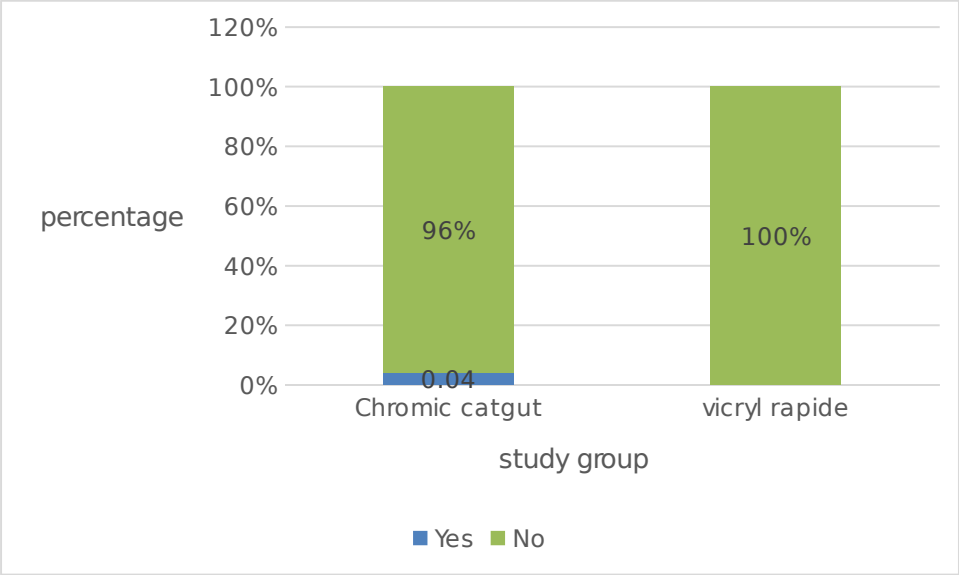

Table19: Comparison of mean Second stage duration (in minutes) across study groups (N=100)

study group	Second stage duration (in minutes) Mean± STD	Mean difference	95% CI		P value
			Lower	Upper	
Chromic catgut	34.7 ± 10.57	-1.50	-5.69	2.69	0.479
vicryl rapide	36.2 ± 10.52				

The mean Second stage duration (in minutes) of chromic catgut group was 34.7 ± 10.57 and the vicryl rapide group was 36.2 ± 10.52. The difference between two groups was statistically not significant (p value 0.479). (Table 19) the two groups were comparable in terms of second stage duration.

Table 20: Comparison of mean B weight (in kgs) across study groups (N=100)

study group	Birth weight (in kgs) Mean± STD	Mean difference	95% CI		P value
			Lower	Upper	
Chromic catgut	2.73 ± 0.17	-0.01	-0.09	0.07	0.781
vicryl rapide	2.74 ± 0.22				

The mean Birth weight (in kgs) of chromic catgut group was 2.73 ± 0.17 and the vicryl rapide group was 2.74 ± 0.22. The difference between two groups was statistically not significant (p value 0.781). (Table 20) the two groups were comparable in terms of birth weight of the babies.

Table 21: Comparison of mean Time taken for suturing (in min) across study groups (N=100)

study group	Time taken for suturing (in min) Mean± STD	Mean difference	95% CI		P value
			Lower	Upper	
Chromic catgut	22.2 ± 5.55	-3.20	-5.32	-1.08	0.003
vicryl rapide	25.4 ± 5.13				

The mean time taken for suturing (in min) of chromic catgut group was 22.2 ± 5.55 and the vicryl rapide group was 25.4 ± 5.13. The difference between two groups was statistically significant (p value 0.003). (Table 21 & figure 9)

Figure 9: Bar chart of comparing Time taken for suturing (in min) for of the two study groups (N=100)

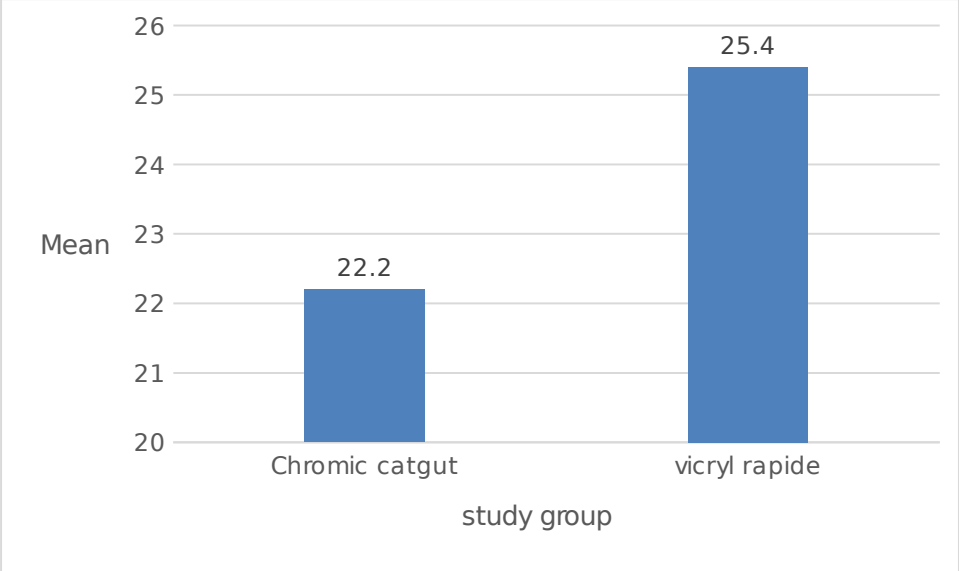

Table22: Descriptive analysis of Group in study population (N=100)

Group	Frequency	Percentage
Chromic catgut intermittent	25	25.00%
Chromic catgut continuous	25	25.00%
vicryl rapide- intermittent	25	25.00%
vicryl rapide continuous	25	25.00%

Among the study population, the chromic catgut intermittent was 25(50%), chromic catgut continuous, vicryl rapide- intermittent and vicryl rapide continuous was 25(50%), 25(50%) and 25(50%) respectively. (table 22 & Figure 10)

Figure 10: Bar chart of Group distribution in study population (N=100)

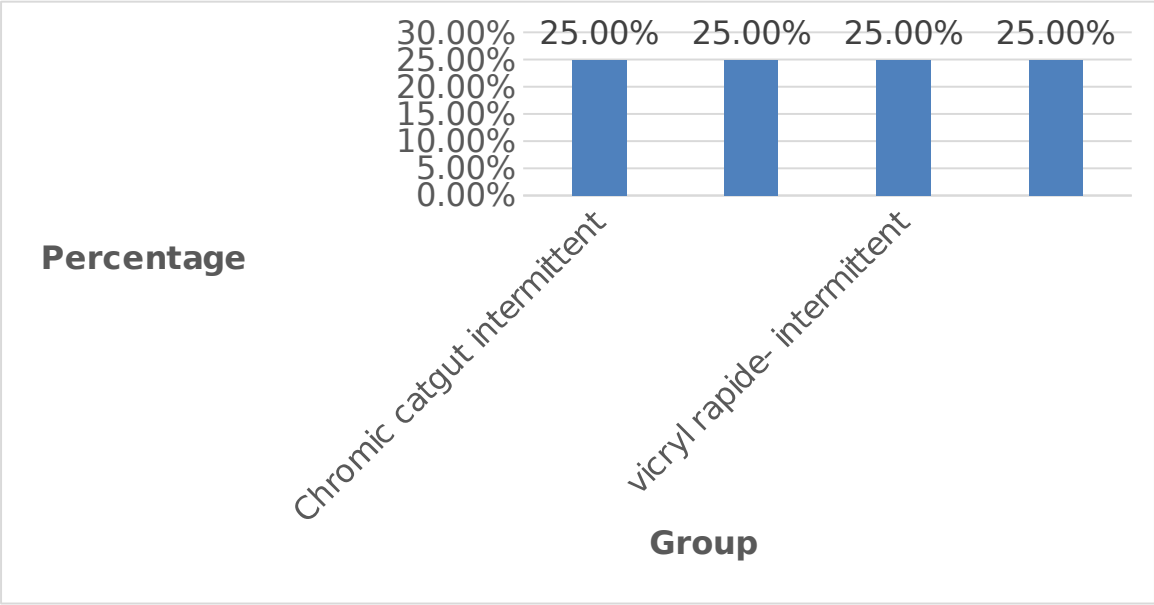

Table 23: Association of Group with Gravida of study population (N= 100)

Gravida	Group				Chi square	P-value
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide- intermittent	vicryl rapide continuous		
Primi	11 (44%)	12 (48%)	8 (32%)	8 (32%)	2.144	0.543
Multi	14 (56%)	13 (52%)	17 (68%)	17 (68%)		

Among the chromic catgut intermittent 11 (44%) were Primi and 14 (56%) were Multi respectively. The number of Primi and Multi was 12 (48%) and 13 (52%) in chromic catgut continuous group. The number of Primi and Multi was 8 (32%) and 17 (68%) in vicryl rapide- intermittent group. The number of Primi and Multi was 8 (32%) and 17 (68%) in vicryl rapide continuous in group. (table 23 & figure 11)

Figure 11: Bar chart of comparing Gravida of the two study groups (N=100)

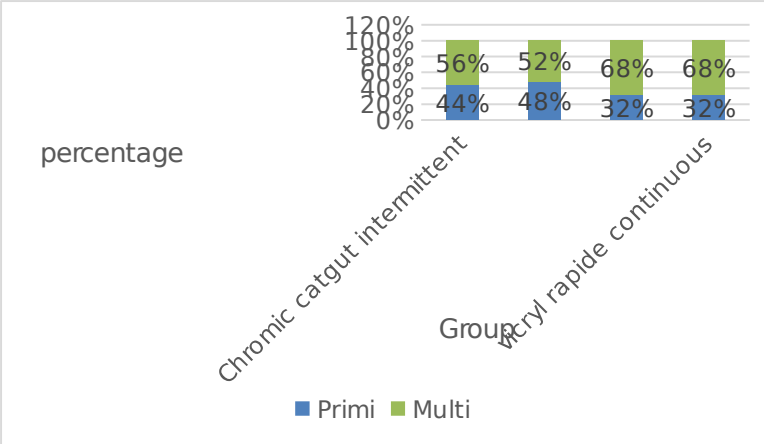

Table 24: Association of Group with Cut through of study population(N=100)

Cut through	Group			
	Chromic catgut intermittent	**Chromic catgut continuous**	**vicryl rapide-intermittent**	**vicryl rapide continuous**
present	0 (0%)	1 (4%)	5 (20%)	6 (24%)
Absent	25 (100%)	24 (96%)	20 (80%)	19 (76%)

*No statistical test was applied considering "0" subjects in one of the cells

Among the Chromic catgut intermittent in 25 (100%) cut through was absent. The number of cut through present and absent was 1 (4%) and 24 (96%) in Chromic catgut continuous group. The number of cut through present and absent was 5 (20%) and 20 (80%) in vicryl rapide- intermittent group. The number of cut through present and absent was 5 (20%) and 20 (80%) in vicryl rapide-continuous group. (table 24)

Table 25: Association of Group with Pain at 2 days of study population (N=100)

Pain at 2 days	Group			
	Chromic catgut intermittent	**Chromic catgut continuous**	**vicryl rapide-intermittent**	**vicryl rapide continuous**
Yes	10 (40%)	5 (20%)	1 (4%)	0 (0%)
No	15 (60%)	20 (80%)	24 (96%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 10 (40%) had pain at 2 days. In the Chromic catgut continuous group 5 (20%) had pain at 2 days. In the vicryl rapide intermittent group, 1 (4%) had pain at 2 days. (table 25)

Table 26: Association of Group with Need for Analgesics at 2days of study population (N=100)

Need for Analgesics at 2days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	6 (24%)	3 (12%)	0 (0%)	0 (0%)
No	19 (76%)	22 (88%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 6 (24%) had need for analgesic at 2 days.

In the Chromic catgut continuous group 3 (12%) had need for analgesic at 2 days (table 25)

Table 27: Association of Group with Edema at 2 days of study population (N= 100)

Edema at 2 days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	2 (8%)	1 (4%)	0 (0%)	0 (0%)
No	23 (92%)	24 (96%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 2 (8%) had Edema at 2 days. In the Chromic catgut continuous group 1 (4%) had Edema at 2 days (table 26)

Table 28: Association of Group with Temperature at 2 days of study population (N=100)

Temperature at 2 days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	1 (4%)	0 (0%)	0 (0%)	0 (0%)
No	24 (96%)	25 (100%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 1 (4%) had Temperature at 2 days. (table 28)

Table 29: Association of Group with Wound Healing at 2days of study population (N=100)

Wound Healing at 2days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Normal	24 (96%)	24 (96%)	25 (100%)	25 (100%)
Abnormal	1 (4%)	1 (4%)	0 (0%)	0 (0%)

*No statistical test was applied considering "0" subjects in one of the cells

Among the Chromic catgut intermittent in 24 (96%) wound healing was normal at 2 days postpartum, 1(4%) was abnormal. The number of wound healing at 2 days

of normal and abnormal was 24 (96%) and 1 (4%) in Chromic cat and gut continuous group. The number of wound healing at 2 days of normal was 25 (100%) in vicryl rapide- intermittent group. The number of wound healing at 2 days of normal was 25 (100%) in vicryl rapide- continuous group. (table 29)

Table 30: Association of Group with Induration at 2days of study population (N=100)

Induration at 2days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide- intermittent	vicryl rapide continuous
Yes	1 (4%)	1 (4%)	0 (0%)	0 (0%)
No	24 (96%)	24 (96%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 1 (4%) patient induration at 2 days. In the Chromic catgut continuous group 1 (4%) patient induration at 2 days. (table 30)

Table 31: Association of Group with Pain at 7days of study population (N=100)

Pain at 7days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	2 (8%)	0 (0%)	0 (0%)	0 (0%)
No	23 (92%)	25 (100%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 2(8%) had pain at 7 days. (table 31)

Table32: Association of Group with Need for Analgesics at 7days of study population (N=100)

Need for Analgesics at 7days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	2 (8%)	0 (0%)	0 (0%)	0 (0%)
No	23 (92%)	25 (100%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 2(8%) had need for Analgesics at 7 days.

(table 32)

Table 33: Association of Group with Edema at 7days of study population (N=100)

Edema at 7days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	2 (8%)	1 (4%)	0 (0%)	0 (0%)
No	23 (92%)	24 (96%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 2(8%) had Edema at 7 days. In the Chromic catgut continuous group 1(4%) had Edema at 7 days. (table 33)

Table 34: Association of Group with Temperature at 7days of study population (N=100)

Temperature at 7days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	1 (4%)	1 (4%)	0 (0%)	0 (0%)
No	24 (96%)	24 (96%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 1(4%) had Temperature at 7 days. In the Chromic catgut continuous group 1(4%) had Temperature at 7 days. (table 34)

Table 35: Association of Group with Wound Healing at 7days of study population (N=100)

Wound Healing at 7days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide- intermittent	vicryl rapide continuous
Normal	24 (96%)	24 (96%)	25 (100%)	25 (100%)
Abnormal	1 (4%)	1 (4%)	0 (0%)	0 (0%)

*No statistical test was applied considering "0" subjects in one of the cells

Among the Chromic catgut intermittent 24 (96%) were in wound healing at 7 days of normal 1(4%) were in abnormal. The number of wound healing at 7 days of normal and abnormal was 24 (96%) and 1 (4%) in Chromic cat and gut continuous group. The number of wound healing at 7 days of normal was 25 (100%) in vicryl rapide- intermittent group. The number of wound healing at 7 days of normal was 25 (100%) in vicryl rapide- continuous group. (table 35)

Table 36: Association of Group with Induration at 7days of study population (N=100)

Induration at 7days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	1 (4%)	1 (4%)	0 (0%)	0 (0%)
No	24 (96%)	24 (96%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 1 (4%) patient induration at 7 days. In the Chromic catgut continuous group 1 (4%) patient induration at 7 days. (table 36)

Table 37: Association of Group with Discharge at 7days of study population (N= 100)

Discharge at 7days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	1 (4%)	1 (4%)	0 (0%)	0 (0%)
No	24 (96%)	24 (96%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 1 (4%) patient discharge at 7 days. In the Chromic catgut continuous group 1 (4%) patient discharge at 7 days. (table 37)

Table 38: Association of Group with Dehiscence at 7days of study population (N=100)

Dehiscence at 7days	Group			
	Chromic catgut intermittent	Chromic catgut continuous	vicryl rapide-intermittent	vicryl rapide continuous
Yes	1 (4%)	1 (4%)	0 (0%)	0 (0%)
No	24 (96%)	24 (96%)	25 (100%)	25 (100%)

*No statistical test was applied considering "0" subjects in one of the cells

In the Chromic catgut intermittent group 1 (4%) Dehiscence at 7 days. In the Chromic catgut continuous group 1 (4%) patient Dehiscence at 7 days. (table 38)

Table 39: Comparison of mean Age across study groups (N=100)

(I) Group	Mean ± Std. Dev	Mean difference	95% Confidence Interval for Mean		P value
			Lower Bound	Upper Bound	
Chromic catgut intermittent	23.88 ± 3.82				
Chromic catgut continuous	24.08 ± 3.15	-0.20	-2.09	1.69	0.834
vicryl rapide- intermittent	25 ± 3.23	-1.12	-3.01	0.77	0.243
vicryl rapide continuous	24.76 ± 3.23	-0.88	-2.77	1.01	0.358

The Mean age of chromic catgut continuous was24.08 ± 3.15. The mean difference of age -0.20 chromic catgut continuous was statistically not significant (p value 0.834). The Mean age of vicryl rapide- intermittent was 25 ± 3.23. The mean difference of age -1.12 vicryl rapide- intermittent was statistically not significant (p value 0.243). The Mean age of vicryl rapide continuous was 24.76 ± 3.23. The mean difference of -0.88 vicryl rapide continuous was statistically not significant (p value 0.358) (table 39) the four groups were comparable in terms of age.

Table 40: Comparison of mean Second stage duration (in minutes) across study groups (N=100)

(I) Group	Mean ± Std. Dev	Mean difference	95% Confidence Interval for Mean		P value
			Lower Bound	Upper Bound	
Chromic catgut intermittent	32.8 ± 9.36				
Chromic catgut continuous	36.6 ± 11.52	-3.80	-9.73	2.13	0.206
vicryl rapide-intermittent	35.6 ± 9.5	-2.80	-8.73	3.13	0.351
vicryl rapide continuous	36.8 ± 11.63	-4.00	-9.93	1.93	0.184

The Mean second stage duration of chromic catgut continuous was 36.6 ± 11.52. The mean difference of age -3.80 chromic catgut continuous was statistically not significant (p value 0.206). The Mean second stage duration of vicryl rapide-intermittent was 35.6 ± 11.52. The mean difference of age -2.80 vicryl rapide-intermittent was statistically not significant (p value 0.351). The Mean second stage duration of vicryl rapide continuous was 36.8 ± 11.63. The mean difference of -4 vicryl rapide continuous was statistically not significant (p value 0.184) (table 40) the four groups were comparable in terms of mean second stage duration.

Table 41: Comparison of mean Birth weight (in kgs) across study groups (N=100)

(I) Group	Mean ± Std. Dev	Mean difference	95% Confidence Interval for Mean		P value
			Lower Bound	Upper Bound	
Chromic catgut intermittent	2.7 ± 0.17				
Chromic catgut continuous	2.75 ± 0.18	-0.05	-0.17	0.06	0.339
vicryl rapide- intermittent	2.73 ± 0.24	-0.03	-0.14	0.08	0.619
vicryl rapide continuous	2.75 ± 0.2	-0.05	-0.16	0.06	0.395

The Mean birth weight of chromic catgut continuous was 2.75 ± 0.18. The mean difference of -0.05 chromic catgut continuous was statistically not significant (p value 0.339). The Mean birth weight of vicryl rapide- intermittent was 2.73 ± 0.24. The mean difference of birth weight -0.03 vicryl rapide- intermittent was statistically not significant (p value 0.619). The Mean birth weight of vicryl rapide continuous was 2.75 ± 0.2. The mean difference of -0.05 vicryl rapide continuous was statistically not significant (p value 0.395) (table 41). The four groups were comparable in terms of birth weight of the babies.

Table 42: Comparison of mean Time taken for suturing (in min) across study groups (N=100)

(I) Group	Mean ± Std. Dev	Mean difference	95% Confidence Interval for Mean		P value
			Lower Bound	Upper Bound	
Chromic catgut intermittent	26.2 ± 4.4				
Chromic catgut continuous	18.2 ± 3.19	8.000	5.95	10.05	<0.001
vicryl rapide- intermittent	29.2 ± 3.73	-3.000	-5.05	-0.95	0.005
vicryl rapide continuous	21.6 ± 3.14	4.600	2.55	6.65	<0.001

The Mean time taken for suturing of chromic catgut continuous was 18.2 ± 3.19. The mean difference of taken for suturing chromic catgut continuous was statistically significant (p value <0.001). The Mean taken for suturing of vicryl rapide- intermittent was 29.2 ± 3.73. The mean difference of taken for suturing -3 vicryl rapide- intermittent was statistically significant (p value 0.005). The Mean taken for suturing of vicryl rapide continuous was 21.6 ± 3.14. The mean difference of 4.6 vicryl rapide continuous was statistically significant (p value <0.001) (table 42)

DISCUSSION

Episiotomy in labour has been debated for a long time since the early 1900s, and became popular only after Pomeroy's study in 1918. Since then various studies have been conducted regarding the need for episiotomy and proved that restricted episiotomy in cases of tight perineum maybe beneficial than the routine episiotomy for all patients.

When after a few years of using episiotomy, there came the debate about the technique of suturing, whether the routine intermittent three layer technique can be used or it may be modified as a continuous technique of suturing for all three layers-mucosa,muscle and skin. A vast number of studies were taken up and done which mostly concluded that the continuous technique is better change than the older intermittent suturing.

Then with the introduction of newer , thinner , monofilament, synthetic absorbable suture materials started the studies regarding which material is best for episiotomy. First, a comparison between chromic catgut traditionally used and vicryl was done. The results were in favour of vicryl which was less tissue reactive and absorbed by hydrolysis and longer time for absorption taken, leading to lesser wound infections and better wound healing and lesser pain postpartum. Further developments in the materials into the vicryl rapide or polyglactin are recently being studied and the use

of these have found to be even better than the conventional vicryl. Most recent ones are studies involving the newer material Dexon and the use of adhesive glue for episiotomy wound.

Even after so many studies being conducted, regarding the need for episiotomy, technique of suturing and the material to be used, most of our government institutions in Tamilnadu still go with the older technique of intermittent suturing and the use of chromic catgut material for suturing. Hence the need for more of such studies to be conducted in our setup and institutions to bring about a change for better pain reduction and wound healing in the simple episiotomy wound.

Our study is a prospective randomized controlled study where the 200 subjects were divided into four groups and episiotomy suturing compared in terms of technique followed and the material used. Both the technique and the material being studied in the same study is different from the other studies , where only either was done. Consent was obtained for episiotomy and suturing and strict asepsis was maintained throughout. Pain relief was given adequately using lignocaine local anesthesia. The patients were then monitored on the 2^{nd} and 7^{th} postpartum days.

In our study there was no significant difference in the groups in terms of mean age and parity,according to tables 2,3,23 and figures 2 and 11. More number of

episiotomy and suturing have been required in the multigravida which is in opposite to other studies regarding the need for episiotomy, which showed more need for episiotomies in primigravida, due to the tight perineum. But the difference is not significant as per the P-value.

During suturing, the time taken for suturing was compared and lesser time was taken in the continuous technique groups, both in the catgut and the vicryl group. The P-Value in comparison was <0.001 which shows that there is statistical difference in the time taken for suturing in the two groups. Figures 9 and tables 21 and 42 comparing the time taken, show that the intermittent suturing took an average of about 29 mins to suture whereas the continuous suturing technique took only about 21mins.

The Mean time taken for suturing of chromic catgut continuous was 18.2 ± 3.19. The mean difference of taken for suturing chromic catgut continuous was statistically significant (p value <0.001). The Mean taken for suturing of vicryl rapide- intermittent was 29.2 ± 3.73. The mean difference of taken for suturing -3 vicryl rapide- intermittent was statistically significant (p value 0.005). The Mean taken for suturing of vicryl rapide continuous was 21.6 ± 3.14. The mean difference of 4.6 vicryl rapide continuous was statistically significant (p value <0.001)

This result is in correlation with other previous studies which show that the time taken for suturing is lesser in the continuous group. These studies also infer that the amount of material needed is also lesser in the continuous group suggesting economic use in terms of both time and material in the continuous technique.

Next comparing the incidence of cut through in both the materials, shown in tables 4 and 24, in 50 patients sutured with catgut, only 1 had cut through that too very minimal. But the vicryl group had 11 cut through while suturing in 50 patients. The study comparision gave a P-Value which was 0.002 which was statistically different.

This comparison of cut through is new in our study not compared extensively in previous studies. This was the only disadvantage observed in our study in the vicryl rapide group which was cut through during suturing.

This cut through caused us to resuture over the already sutred points at certain bleeding points in very soft and fragile vaginas in few gravid females. Most of the cut throughs though present , did not require to be sutured again to achieve hemostasis and there was no difference in wound healing in the patients who had cut through during suturing.

With the parameters compared at the time of suturing , we now move on to the parameters compared on the 2nd postnatal day. The main parameter studied was pain and there was statistically significant difference between both the techniques and materials in terms of pain.

In the 25 patients sutured with chromic catgut in the intermittent technique , about 10 women had pain at 2 days postpartum, whereas in the catgut continuous group, only 5 patients had pain on the 2nd PND, shown in tables 5 and 25. This infers that the continuous technique causes lesser pain at 2 days postpartum than the intermittent technique.

This results was similar in the vicryl group comparing the two techniques where the vicryl intermittent group had 1 patient with pain whereas the vicryl continuous group no patients had significant complaints of pain.

This inference is in correlation with various studies comparing the two techniques and showing that the continuous technique results in lesser pain than the intermittent.

From the same table we can compare the incidence of pain between the two suture materials- in the 50 patients sutured using catgut there was pain in about 15 patients whereas the vicryl group of 50, only 1 patient had complained of pain in

the 2nd PND. This shows that suturing using monofilament vicryl rapide causes lesser pain than the chromic catgut.

Further comparing both the material and the technique in terms of pain, of the four groups the obvious result is that vicryl rapide continuous group is the best for reducing pain on 2nd postnatal day after episiotomy suturing.

Studies with regard to this results are as follows. Masson et al conducted a study in 2000 patients comparing the pain at 2nd PND and showed significant difference in pain with very much decreased pain in the polyglactin group.

Shah PK studied the same and found out about 51% pain at postnatal day 2 in the polyglactin group, compared to 61% in the catgut group. The Ipswich childbirth study comparing the two suture materials also showed distinct advantage of lesser pain at 48 hours postpartum in the polyglactin group.

These studies also had followed the patients upto three months postpartum, and compared dyspareunia in the two groups.No statistically significant difference between the two groups was noted in the studies. The Cochrane systematic review of eight randomized controlled trials by Kettle C and Johanson RB involving 3642 women showed there was no clear difference in terms of long term pain and dyspareunia in the absorbable synthetic when compared to catgut suture material. Mackrodt C et al and Shah PK et al also showed no clear difference between the

polyglactin 910 and chromic catgut group in terms of dyspareunia or failure to resume pain free intercourse.

McElhinney BR et al in their study showed a statistically significant difference (tvalue 2.440) at twelve weeks only 5% of polyglactin (Vicryl rapide) patients complained of dyspareunia when compared to 20% of the standard polyglactin group.

Tables 6 and 26 and figure 3: Of the patient complaining of pain, women requiring analgesics were 6 out of 10 women in the chromic intermittent group and 3 out of 5 in the catgut continuous group. None in the vicryl rapide group had pain so severe requiring analgesics.

Moving on to comparing other parameters,tables 7,27,8,28,10,30 show that edema of the sutured area was found in about 2 patients in the catgut intermittent group and 1 patient in the catgut continuous group. Local warmth or temperature of the wound site was present in one each in the catgut intermittent and continuous groups. Induration was also present in one patient each in the catgut continuous and intermittent group.

All factors lead on to wound healing and hence with all these acting together on the wound, the wound healing was found to be abnormal in one patient in the catgut continuous group and one in the intermittent group. From the above results , we can see that there was no abnormalities in the wound healing and no derangements like edema, local warmth or temperature, induration in the vicryl rapide group . in all 50 patients in whom we used vicryl rapide, the wound healing was normal on the 2nd postnatal day.

These results are similar to all the previous studies done which say that wound healing is better in the vicryl rapide material than when using chromic catgut.

A study compared vicryl vs vicryl rapide, which stated that, although there seems to be no doubt that polyglycolic acid is the preferable suture material, there are still problems associated with its use. Coated Vicryl offers effective wound support for up to 30 days and then gradually absorbs. This is longer than would normally be necessary and there is often a need to remove polyglycolic acid material in the puerperium. This may explain why women often experience discomfort and tightness in the postpartum period. In view of this, we decided to perform this study and ascertain whether mothers sutured with Vicryl rapide experienced less postpartum morbidity than mothers sutured with Vicryl. A similar study by Gemynthe et al 9 compared the outcome in those sutured with Vicryl to those sutured with Vicryl rapide. At 48 hours, five days and three months after delivery

there was no difference in pain and discomfort in the perineal area between the two groups. At 14 days, mothers sutured with Vicryl rapide experienced significantly less perineal pain and discomfort when walking. The difference in terms ofwomen undergoing removal of stitches or visible stitches at examination two months after delivery was not statistically significant although the rate was higher in women sutured with Vicryl. The difference in pain when walking was explained by the dissimilar tensions at that time which would support the hypothesis based on the physical properties of the Vicryl rapide i.e. at 14 days there is no tensile strength left whereas 50% tensile strength was left in the vicryl group.

The same parameters were measured on postnatal day 7 by follow up in the postnatal ward. Tables 11, 31, the incidence of pain in the chromic catgut intermittent group was 2 patients out of 25, out of that both required analgesics even on the 7th PND. Figure 5 also compares pain on the 7th PND. There was local warmth,edema,induration and abnormal wound healing in one patient in the catgut intermittent group compared in tables 13,33,14,34,16,36, abnormal wound healing meaning wound dehiscence with discharge shown in tables 15,17,37,18,38 and figures 7,8, in that one patient needing resuturing. She was given IV antibiotics and planned for secondary suturing. On the 7th postpartum day, all the three other groups had normal parameters and wound healing. Though this result may not be theoretically or statistically significant, clinically our observation is that there was

wound dehiscence in only the catgut intermittent group, that we usually use in practice in our government hospitals , which can be changed to better options . This can be extrapolated to other studies where the results were similar saying the intermittent suturing is disadvantage than the continuous technique, and also the monofilament polyglactin is the better option than chromic for better wound healing.

According to the study conducted in Davangare, the primary intention of the wound healing was observed in 82% of the cases in the vicryl rapide group and in 71% of the cases in the chromic catgut group. The wound healing by secondary intention was observed in 3.5% of the cases in the vicryl rapide group and in 8% of the cases in the chromic catgut group. The tertiary type was seen in 2% of the cases in the chromic catgut group and in none in the vicryl rapide group. this is similar to our study where none in the vicryl rapide group had tertiary wound healing.

In a recent study in Dharmapuri medical college, conducted in 2017, comparison between catgut and absorbable synthetic suture material showed better wound healing with no or zero percent wound dehiscence on PND 7 in the polyglactin group compared to 15% in the catgut group, which correlates with our study.

In a study conducted in Maharashtra, comparing the two techniques of suturing and wound healing in the rural population of India, the continuous technique was better

than the intermittent technique, 58% had pain in the continuous suturing but 76% in the intermittent group. Of these, the pain was mild in the continuous group, but moderate to severe in the intermittent group. analgesics relieved pain in 68% in the continuous suturing group, but only 20% in the intermittent suturing were relieved of pain. These results are also similar to our study.

SUMMARY

We conducted a prospective randomized controlled study in about 100 patients , women needing an episiotomy after labour natural, in Government Mohan Kumaramangalam medical college hospital. They were divided into four groups- episiotomy sutured using chromic catgut material and vicryl rapide material, and also divided depending on the technique-continuous versus intermittent.

The time taken to suture, incidence of cut- through were the parameters observed during suturing. Then the patients were followed up in the postnatal ward on the 2nd and 7th postpartum day to see for parameters like pain at the wound site, severity of the pain whether there was need for analgesics, edema , temperature or local warmth, induration, wound healing- discharge and dehiscence.

1. The time taken to suture was found to be lesser in the continuous technique groups in both suture materials, than the intermittent technique.
2. The incidence of cut through was higher in the vicryl rapide material than the chromic catgut.
3. The incidence of pain on the 2nd postnatal day was higher in the chromic catgut group than in the vicryl rapide group.
4. The incidence of pain was lesser in the continuous suturing technique than in the intermittent technique.
5. The abnormal wound healing incidence was higher in the chromic catgut groupthan the vicryl rapide material.

6. The parameters like edema , temperature, induration were more in the chromic group than the vicryl group
7. Wound healing was also found to be better in the continuous technique than the intermittent technique, maybe due to more number of knots, which may hinder wound healing in the latter.
8. Wound discharge and dehiscence was present only in the chromic catgut intermittent group, which suggests a change in the material and technique from the conventional use.

CONCLUSION

It is obvious that absorbable sutures be used for episiotomy. Of those polyglycolic sutures are preferred over chromic catgut because of their non- allergic properties, increased tensile strength, lesser probability of pain and lower chances of infection. Catgut is an alternative, but not the ideal suture material. Continuous technique of suturing is more ideal and preferred than the intermittent technique for it takes lesser time to suture, lesser material used, lesser knots and hence lesser pain.

Hence we conclude that the continuous suturing using vicryl rapide is better and ideal for episiotomy wound than the intermittent technique and catgut material.

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PATIENT CONSENT FORM

STUDY TITLE: ***A COMPARITIVE STUDY OF EPISIOTOMY SUTURING-CHROMIC CATGUT VS VICRYL RAPIDE AND CONTINUOUS VS INTERMITTENT SUTURING-A RANDOMISED CONTROLLED STUDY***

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY, GMKMCH SALEM

PARTICIPANT NAME: AGE: SEX:

I.P. NO:

I confirm that I have understood the purpose of the above study. I have the opportunity to ask the question and all my questions and doubts have been answered to my satisfaction.

I have been explained about the possible complications that may occur during and after medical procedure. I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving any reason.

I understand that investigator, regulatory authorities and the ethics committee will not need my permission to look at my health records both in respect to the current study and any further research that may be conducted in relation to it, even if I withdraw from the study. I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. I agree not to restrict the use of any data or results that arise from the study.

I hereby consent to participate in this study.

Time: Patient name:

Date: Signature / Thumb Impression of Patient:

Place Name and signature of the Investigator

PROFORMA

A COMPARITIVE STUDY OF EPISIOTOMY SUTURING-CHROMIC CATGUT VS VICRYL RAPIDE AND CONTINUOUS VS INTERMITTENT SUTURING-A RANDOMISED CONTROLLED STUDY

GROUPS:

group 1: chromic catgut intermittent

group 2: chromic catgut continuous

group 3: vicryl rapide intermittent

group 4: vicryl rapide continuous

PATIENT DETAILS:

NAME:

AGE:

IP NO:

GRAVIDA:

DATE OF DELIVERY:

B.WT OF THE BABY:

OBSERVATIONS:

DURING SUTURING

TIME TAKEN FOR SUTURING:

CUT THROUGH DURING SUTURING: YES/NO

PND2:

PAIN:

NEED FOR ANALGESICS:

EDEMA:

TEMPERATURE:

INDURATION:

WOUND DISCHARGE:

WOUND DEHISCENCE:

PND7:

PAIN:

NEED FOR ANALGESICS:

EDEMA:

TEMPERATURE:

INDURATION:

WOUND DISCHARGE:

WOUND DEHISCENCE: